radicals; halogen radicals; nitrogen-substituted radicals; oxygen-substituted radicals; or hydrogen atoms.

REMARKS

Reconsideration and continued examination of the above-identified application are respectfully requested.

The amendment to the claims removes formula 2 c) from claim 2 and further defines what the applicants regard as their invention. Support for the amendment can be found throughout the present application, for instance, at pages 3, lines 13-22; page 6, line 1 - page 7, line 1; page 10, lines 13-15 and lines 18 – page 11, line 31; page 15, lines 4-17; the examples, and the claims as originally filed. Accordingly, no questions of new matter should arise and entry of the amendment is respectfully requested.

At page 2 of the Office Action, the Examiner rejects claims 1-23 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. More specifically, the Examiner questions what is meant by the phrase "having at least two hydroxyl containing terminal groups with different functionalities." The Examiner provides a few hypothetical examples to emphasize this point in more detail. For the following reasons, this rejection is respectfully traversed.

As explained at page 3, lines 13-22 of the present application, conventional technology used diol esters with terminal hydroxyl groups having the same reactivity. Therefore, a subsequent reaction with an isocyanate would occur with equal frequency at either ends of the oligomer. By contrast, in the present invention, the hydroxyalkanoate

derivatives preferably have hydroxy terminal groups with different functionalities, thus having different reactivity towards isocyanate groups. This configuration significantly changes the course of reaction when the hydroxyalkanoates are combined with polyisocyanates to form polyurethanes. In other words, the difference in chemical reactivity of the different portions of the molecule allows the generation of unique polyurethane structures with enhanced properties. New claim 26 uses terminology to better assist the Examiner. Accordingly, the rejection under 35 U.S.C. § 112, second paragraph should be withdrawn.

At pages 2-3 of the Office Action, the Examiner rejects claims 1-3, 5, 7-12, 14, 15 and 17-24 under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a), as obvious over Marans et al. (U.S. Patent No. 4,132,839). More specifically, the Examiner states that the reference teaches polyurethane foam prepared by reacting an isocyanate with a compound containing a hydroxyalkanoate. The Examiner further states that the use of the specific hydroxyalkanoates required in the claims is anticipated by, or would have been obvious over, the teachings of the reference. For the following reasons, this rejection is respectfully traversed.

In general terms, Marans et al. concerns an isocyanate-capped hydroxyester polyether polyol having an isocyanate functionality of at least 2, and its reaction with water, as set forth at column 1, line 65 to column 2, line 3. According to at least one of the inventors, Marans et al. relates to the reaction of a hydoxyacid with a polyol in a stoichiometric ratio such that all the hydroxyl groups on the polyol have been reacted with the hydroxy acid. Thus, all the terminal hydroxyl groups of the final product have the

same reactivity towards isocyanate groups. Therefore, Marans et al. does not teach or suggest the claimed invention, which relates to different reactivities. Accordingly, the rejection over Marans et al. should be withdrawn.

At page 3 of the Office Action, the Examiner rejects claims 1, 8, 9-18, 17-20, 24 and 25 under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a), as obvious over Koleske et al. (U.S. Patent No. 4,223,119). More specifically, the Examiner states that the reference teaches a polyurethane coating composition prepared by reacting an isocyanate with a compound containing a hydroxyalkanoate. The Examiner refers to Example 16 and states that the term "thermally decomposable or biodegradable" hydroxyalkanoate does not distinguish over the compounds used in the cited example. For the following reasons, this rejection is respectfully traversed.

In general terms, Koleske et al. contains high solids compositions containing ester diol alkoxylate and organic polyisocyanate. The structure of the ester diol alkoxylate is shown at column 2, lines 1-10. According to at least one of the inventors, Koleske et al. relates to the generation of an alkanoate diol by reaction of a hydoxyacid with a diol and then subsequent polymerization of the hydoxyacid. Caprolactone is the specific hydoxyacid mentioned in Koleske et al., where, in the resultant dihydroxy polyol, the hydroxyl groups have the same activity. However, in the claimed invention, the at least two hydroxyl groups have a different reactivity to the isocyanate group. Thus, Koleske et al. does not teach or suggest the claimed invention. Accordingly, the rejection over Koleske et al. should be withdrawn.

Also at page 3 of the Office Action, the Examiner rejects claims 1-13 and 16-25

under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a), as obvious over Neuenschwander et al. (U.S. Patent No. 5,665,831). More specifically, the Examiner states that the reference teaches a polyurethane prepared by reacting an isocyanate with a compound containing a hydroxyalkanoate. The Examiner states that the use of the specific hydroxyalkanoates required in the claims is anticipated by, or would have been obvious over, the teachings of the reference. For the following reasons, this rejection is respectfully traversed.

In general terms, Neuenschwander et al. relates to the formation of a biocompatible multi-block copolymer, having at least two chemically different block units, which are joined to one another by means of diisocyanate, diacid halide, or phosgene, by linear condensation, as set forth at column 2, lines 9-14. However, no portion of the cited text specifically addresses the requirement of at least one compound having at least two hydroxyl groups having different reactivity to the isocyanate group, wherein the compound includes a thermally decomposable or biodegradable hydroxyalkanote component. Thus, Neuenschwander et al. does not teach or suggest the claimed invention. Accordingly, the rejection over Neuenschwander et al. should be withdrawn.

Also at page 3 of the Office Action, the Examiner rejects claims 1-20 and 22-26 under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a), as obvious over Yamaguchi et al. (U.S. Patent No. 5,352,763). More specifically, the Examiner states that the reference teaches a polyurethane prepared by reacting an isocyanate with a compound containing a hydroxyalkanoate, as set forth in the claims of the reference. The Examiner states that the use of the specific hydroxyalkanoates required

in the claims of the present invention is anticipated by, or would have been obvious over, the teachings of the reference. For the following reasons, this rejection is respectfully traversed.

In general terms, Yamaguchi et al. relates to the formation of an optically active oligomer with an (R)-3HA unit which is copolymerized with a monomer in the presence of a catalyst to provide a corresponding optically active polymer, as set forth at column 1, lines 61-66. According to at least one of the inventors, Yamaguchi et al. relates to the generation of a polyalkanoate diol by reacting a polyhydroxyacid with a diol, where, in the resultant dihydroxyl polymer, the hydroxyl groups have the same activity. However, as stated earlier, in the claimed invention, the at least two hydroxyl groups have a different reactivity to the isocyanate group. Thus, Yamaguchi et al. does not teach or suggest the claimed invention. Accordingly, the rejection over Yamaguchi et al. should be withdrawn.

At page 4 of the Office Action, the Examiner rejects claims 1-3, 8-13, 17-20, 24 and 25 under 35 U.S.C. § 102(b or e) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a), as obvious over WO 94/03510 and Kim et al. Kim et al. (U.S. Patent No. 6,372,876) is the U.S. counterpart to WO '510, and all further remarks will be referenced against the cited U.S. patent. The Examiner states that Kim et al. teaches a polyurethane prepared by reacting an isocyanate with a compound containing a hydroxyalkanoate. The Examiner then states that the use of the specific hydroxyalkanoates required in the claims is anticipated by, or would have been obvious over, the teachings of the reference. For the following reasons, this rejection is respectfully traversed.

In general terms, Kim et al. relates to polyurethanes which are soluble or dispersible in water as aids in cosmetic and pharmaceutical compositions, and also relates to polyurethanes that contain certain polylactic acid polyols as copolymerized units. According to at least one of the inventors, Kim et al. is very specific to a polylactide derivative, where, in the resultant hydroxyl terminated polymer, all the hydroxyl groups have the same activity. However, in the claimed invention, the at least two hydroxyl groups have a different reactivity to the isocyanate group. Thus, Kim et al. does not teach or suggest the claimed invention. Accordingly, the rejection over Kim et al. should be withdrawn.

Also at page 4 of the Office Action, the Examiner rejects claims 1-25 under 35 U.S.C. § 102(b or e) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a), as obvious over WO 98/55527 and Lee et al. Lee et al. (U.S. Patent No. 6,228,969) is the U.S. counterpart to WO '527, and all further remarks will be referenced against the cited U.S. patent. The Examiner states that Lee et al. teaches a polyurethane prepared by reacting an isocyanate with a compound containing a hydroxyalkanoate. The Examiner then states that the use of the specific hydroxyalkanoates required in the claims is anticipated by, or would have been obvious over, the teachings of the reference. For the following reasons, this rejection is respectfully traversed.

In general terms, Lee et al. relates to biodegradable linear polyester urethanes, as well as crosslinked polyester urethanes. The abstract notes that the degree of crosslinking is correlated to the rate of decomposition. According to at least one of the inventors, Lee et al. shows the generation of a polyalkanoate diol by reaction of a polyhydroxyacid with a

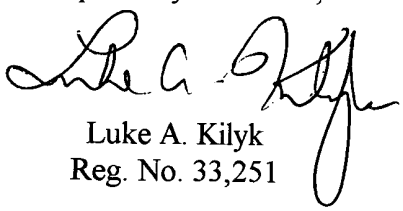
diol, where, in the resultant dihydroxyl polymer, the hydroxyl groups have the same activity. However, in the claimed invention, the at least two hydroxyl groups have a different reactivity to the isocyanate group. Thus, Lee et al. does not teach or suggest the claimed invention. Accordingly, the rejection over Lee et al. should be withdrawn.

CONCLUSION

In view of the foregoing remarks, Applicants respectfully request the reconsideration of this application and the timely allowance of the pending claims.

If there are any other fees due in connection with the filing of this response, please charge the fees to Deposit Account No. 50-0925. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such extension is requested and should also be charged to said Deposit Account.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

4. (Amended) The polyurethane of claim [1] 26, wherein said hydroxyalkanoate is 3 hydroxybutyric acid combined with ethylene glycol, 1, 3 propane diol, 1,2 propane diol, 1,3 butane diol, 1, 4 butane diol, or combinations thereof.

5. (Amended) The polyurethane of claim [1] 26, wherein said hydroxyalkanoate is 3 hydroxybutyric acid combined with polyethylene glycol having from about 1 to about 100 ethylene glycol repeat units.

6. (Amended) The polyurethane of claim [1] 26, wherein said hydroxyalkanoate is a mixture of 3 hydroxybutyric acid and 3 hydroxyvaleric acid combined with ethylene glycol, 1, 3 propane diol, 1,2 propane diol, 1,3 butane diol, 1, 4 butane diol, or combinations thereof.

7. (Amended) The polyurethane of claim [1] 26, wherein said hydroxyalkanoate is a mixture of 3 hydroxybutyric acid and 3 hydroxyvaleric acid combined with polyethylene glycol having from about 1 to about 100 ethylene glycol repeat units.

8. (Amended) The polyurethane of claim [1] 26, wherein said isocyanate containing material is toluene diisocyanate, methylene 4, 4' diphenyl diisocyanate, isophorone diisocyanate, hexamethylene diisocyanate, a combinations thereof.

9. (Amended) The polyurethane of claim [1] 26, wherein the weight ratio of isocyanate groups to hydroxy groups is from 0.5:1 to 2:1.

10. (Amended) The polyurethane of claim [1] 26, wherein the polyurethane is biodegradable.

11. (Amended) The polyurethane of claim [1] 26, wherein the polyurethane is hydrophilic.

12. (Amended) The polyurethane of claim [1] 26, wherein the polyurethane is hydrophobic.

13. (Amended) The polyurethane of claim [1] 26, wherein the polyurethane is a coating.

14. (Amended) The polyurethane of claim [1] 26, wherein the polyurethane is a flexible foam.

15. (Amended) The polyurethane of claim [1] 26, wherein the polyurethane is a rigid foam.

16. (Amended) The polyurethane of claim [1] 26, wherein the polyurethane is an elastomer.

17. (Amended) The polyurethane of claim [1] 26, wherein the polyurethane is water dispersible.

18. (Amended) The polyurethane of claim [1] 26, wherein the hydroxyalkanoate is a polymer of one or more subunits having the chemical formula:

$$-OCR^1R^2(CR^3R^4)_nCO-$$

where in n is 0 or an integer, and wherein R^1, R^2, R^3, and R^4, which are the same or different, is selected from saturated and unsaturated hydrocarbon radicals; halo- and hydroxy-substituted radicals; hydroxy radicals; halogen radicals; nitrogen-substituted radicals; oxygen-substituted radicals; or hydrogen atoms.

19. (Amended) The polyurethane of claim [1] 26, wherein said hydroxyalkanoate is a polymer.